

**ABSTRACT OF THE DISCLOSURE**

The present invention provides novel polynucleotides encoding MGAT3 polypeptides, fragments and homologues thereof. Also provided are vectors, host  
5 cells, antibodies, and recombinant and synthetic methods for producing said polypeptides. The invention further relates to diagnostic and therapeutic methods for applying these novel MGAT3 polypeptides to the diagnosis, treatment, and/or prevention of various diseases and/or disorders related to these polypeptides, such as obesity. The invention further relates to screening methods for identifying agonists  
10 and antagonists of the polynucleotides and polypeptides of the present invention.